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EXAMINER
SOL, ANTHONY M

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/614,257	SHUEN ET AL.
	Examiner	Art Unit	
	Anthony Sol	2619	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 August 2007</u>.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-20</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

- Applicant's Amendment filed 8/8/2007 is acknowledged.

- The previous objections to claims 15-18 are withdrawn.

- Claims 1 and 15-17 have been amended.

- Claims 18-20 have been added.

- Claims 1-20 are now pending.

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1- 4, and 7-15 are rejected under 35 U.S.C. 102(e) as being

anticipated by Pub. No. US 2002/0046271 A1 ("Huang").

Regarding claim 1,

Huang shows in fig. 8, executing the STP at each intermediate network device

802, 804, 806 of the stack 800 so as to assign the stack port of each device 810, 822,

832 to either a Root Port Role or a Designated Port Role (para. 95, lines 8-9, *select the*

root port and the designated ports), and to assign a non-stack port 840 at single

device 806 of the stack 800 to the Root Port Role (para. 62, lines 14-16, *standard STP*

determines the root port based upon the receiving port ID and the corresponding

path costs)(see paras. 105-108 to see steps involved in topology change as the events are propagated toward a root across stack 800).

Huang further discloses transitioning the ports assigned to the Root Port Role and the Designated Port Role to a forwarding STP state (para. 61, *When the topology of the stack changes, stack ports may change from the blocking state to the forwarding state*). Note that a stack port consists of a root port and designated ports as is disclosed above in the previous paragraph.

Huang still further discloses designating all non-stack ports (para. 117, line 6, *non-stack ports*) at the devices of the stack 800 that provide connectivity to the root (para. 106, line 8, *external switch*), other than the non-stack port 840 assigned to the Root Port Role, as Alternate Stack Root Ports (para. 117, lines 5-6, *GVRP configuration will only enable/disable GVRP on non-stack ports*).

Huang still further discloses transitioning the Alternate Stack Root Ports to a discarding STP state (para. 117, lines 5-6, *GVRP configuration will only enable/disable GVRP on non-stack ports*) and in response to a failure at the non-stack port assigned to the Root Port Role, transitioning a selected one of the Alternate Stack Root Ports from the discarding STP state directly to the forwarding STP state (para. 59, *Having an elected master operational at all times eliminates a single-point-of-failure problem in conventional stack configurations. The SNMP agent 118 can always communicate with a stack master*; para. 63, *When the master is down, the slaves continue running with the old master bridge ID until a new master is selected*; para. 107, *a nonstack port*

*makes an STP **state transition**).*

3.   Regarding claims 2 and 3,

Huang discloses that each switch independently builds a minimal cost spanning

tree using a minimal cost spanning tree algorithm, and elects a master switch based

upon the topology map (para. 60). Huang further discloses that when two BPDUs with

the same root bridge ID, root path cost, and originator ID are received, standard STP

determines the root port based upon the receiving port ID and the corresponding path

costs (para. 62).

4.   Regarding claim 4,

Huang discloses when a switch receives a proprietary TCN packet from a stack

port in the forwarding state, it sends back a proprietary Topology Change

Acknowledgment (TCA) packet (para. 99).

5.   Regarding claim 7,

Huang discloses designating a port cost of zero to assign root port and

designated port (para. 68-90).

6.   Regarding claim 8,

Huang shows in fig. 8, stack 800 consisting of three stack switches 802, 804, and

806 (para. 105).

7.   Regarding claims 9, 11, and 12,

Huang discloses Hello Protocol module 100 that periodically sends "hello"

packets through its configured stack ports to establish "adjacency" with other switches

in the same stack (para. 46).

8.   Regarding claim 10,

Huang shows in fig. 8, a plurality of ports of interfaces 810, 832 for connecting a

device 806 to a network entity such as one connected coupled to port 840.

Huang further shows in fig. 8 at least one stack port of interface 832 for

connecting the device 806 to one or more other intermediate network devices 802, 804

that cooperate to form a stack 800.

Huang discloses a port role selection state machine, Topology Discovery/**Master

Election protocol 102**, configured to assign roles to the ports (para. 64, *The STP

states of the stack ports are determined by the Topology Discovery protocol 102*)).

Huang discloses a port transition state machine, Topology Discovery protocol

102, configured to transition the ports among a plurality of spanning tree protocol (STP)

states depending on the assigned roles (para. 64, *The STP states of the stack ports are

determined by the Topology Discovery protocol 102*).

Huang further discloses a port role selection state machine, Master Election

protocol 102, is configured and arranged to assign the stack port to one of a Root Port

Role/Master role or a Designated Port Role/Slave role (para. 52, *According to a first*

rule, if there exists an L3-capable switching node in the topology map, elect the L3-capable switching node with the smallest switch ID as the master… Otherwise, it takes a slave role). Note that the determination of the master/slave role also determines the Root Port Role or Designated Port Role.

Huang still further discloses that the port transition state machine is configured and arranged to transition those ports that are assigned to the Root Port Role or to the Designated Port Role to a forwarding spanning tree port state (para. 61, *A stack port is in the forwarding state if it is one of the end points of a tree branch link…When the topology of the stack changes, stack ports may change from the blocking state to the forwarding state).*

9.   Regarding claim 13,

Huang discloses that the STP module determine the STP states of the non-stack ports (para. 64).

Huang discloses when a switch receives a proprietary TCN/BPDU packet from a stack port in the forwarding state, it sends back a proprietary Topology Change Acknowledgment (TCA) packet (para. 99).

10.   Regarding claims 14 and 20,

Huang discloses executing the STP so as to assign the stack port to a Root Port

Role (para. 52, *Election of the master is accomplished in accordance with the Master*

Election protocol 102). Note that the determination of the master/slave role also

determines the Root Port Role.

Huang further discloses transitioning the stack port, which has been assigned to

the Root Port Role, to a forwarding STP state (para. 61, *A stack port is in the forwarding*

state if it is one of the end points of a tree branch link...When the topology of the stack

changes, stack ports may change from the blocking state to the forwarding state).

Huang still further discloses designating all non-stack ports that provide

connectivity to the root as Alternate Stack Root Ports (para. 54, *if no switch declares to*

be the master). Note that determination of the master/slave role also determines the

type of port designations such as Stack Root Port or Alternate Stack Root Ports.

Huang still further discloses transitioning the Alternate Stack Root Ports to a

discarding STP state (para. 61, *The STP running at a switching node determines the*

STP states of its own nonstack ports... link up/down events... a transition between a

master role and a slave role).

Huang still further discloses that in response to receiving from a source

intermediate network device a proposal Bridge Protocol Data Unit (BPDU) message on

the stack port that specifies a path cost to the root and that seeks to transition a port of

the source device to a forwarding state, issuing one or more Rapid Transition

Acknowledgment messages to the source device, provided that the specified path cost

of the proposal BPDU is lower than the root path costs associated with the Alternate

Stack Root Ports (para. 62, *When a BPDU is received, it forwards the BPDU*

unchanged to all stack ports... standard STP determines the root port based upon the receiving port ID and the corresponding path costs; para. 96, *the STP module in turn calls topology_change_detection to initiate a topology change event, and send a BPDU packet from the receiving port, with a topology change acknowledgment flag set to one, to acknowledge receiving the TCN packet)*

Huang still further discloses that the one or more Rapid Transition Acknowledgment messages signal the intermediate network device's agreement to the port of the source device transitioning to the forwarding state (para. 100, *determines the topology change flag in the forged BPDU, and passes it to the STP module 106 with the forged BPDU that has the TCA flag set to one)*. Note TCA is the acknowledgment message.

11.   Regarding claim 15,

Huang discloses that the SSI module 104 receives a TCA packet from a stack port and determines the receiving port's designated root path cost among other designations and determines the topology change status in the switch (para. 100).

12.   Regarding claims 18 and 19,

Huang discloses that path costs of the stack ports are one and the path costs of the nonstack ports are ten (para. 67), which inherently causes the stack ports to be assigned to the forwarding spanning tree port state.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13.   Claims 5, 6, 16, and 17 are rejected under 35 U.S.C. 103(a) as being

unpatentable over U.S. Huang in view of Admitted Prior Art ("APA").

Regarding claims 5 and 16,

Huang does not disclose transitioning the given Alternate Stack Root Port of the

source device from the discarding STP state directly to the forwarding STP state if it

receives a Rapid Transition Acknowledgement message from each other member of the

stack.

The Applicant's APA discloses a topology change acknowledgment (ACK) flag

142 and that the handshake utilized by adjacent bridges allows for rapidly transitioning

designated ports to the forwarding states.

It would have been *prima facie* obvious to one of ordinary skill in the art at the

time of the invention was made to modify the architecture for creating a single image for

a stack of switches of Huang to use the IEEE Std. 801.w standard including the ACK

flag 142 as taught by the APA. One skilled in the art would have been motivated to

make the combination in order to comply with the well-known IEEE standard and to

minimize network outage.

14.   Regarding claim 6,

Huang does not explicitly disclose that the spanning tree protocol is one of the

IEEE Std 802.1w.1w-2001 and the IEEE Std.802.1s-2002 specification standards.

The Applicant's APA discloses IEEE Std. 801w standard (Applicant's

Specification, p. 3, lines 25-27).

It would have been *prima facie* obvious to one of ordinary skill in the art at the

time of the invention was made to modify the architecture for creating a single image for

a stack of switches of Huang to use the IEEE Std. 801.w standard as taught by the

APA. One skilled in the art would have been motivated to make the combination in

order to comply with the well-known IEEE standard.

15.   Regarding claim 17,

Huang discloses that the standard GVRP protocol is running independently at

each switching node, and results in each switching node independently determining its

own VLAN domain for each VLAN (para. 117).

Response to Arguments

16.   Applicant's arguments filed 8/8/2007 have been fully considered but they are not

persuasive.

- Regarding claim 1, the Applicant argues on page 9 of the Remarks that Huang does not mention "assigning stack ports to either root or designate port role."

- The Examiner respectfully disagrees. Huang discloses a stack port that is a root port (para. 99, *root port is a stack port*). Huang further discloses *designated port ID* (para. 100).

- The Applicant further argues that Huang does not teach or suggest an Alternate Stack Root Port designation, which can be transitioned from the discarding STP state directly to the forwarding STP state.

- The Examiner respectfully disagrees. Huang discloses that the STP running at a switching node determines the STP states of its own non-stack ports (para. 61). It is inherent that the STP states are reference to forwarding and blocking states, among other states. Furthermore, it is also inherent that spanning tree allows redundant links (claimed Alternate Stack Root Port), which are not the root port, to provide automatic backup links if the active link fails. As for the Applicant's argument that the claim requires the transition to occur "directly" by pointing out that Huang's system needs to undergo a lengthy conventional transition process to assume root port role, it is it is noted that the features upon which applicant relies (i.e., what "directly" entails) are not recited in the

rejected claim(s). Although the claims are interpreted in light of the

specification, limitations from the specification are not read into the

claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057

(Fed. Cir. 1993). Furthermore, as noted above, the spanning tree

provides for an **automatic** packup paths by the redundant links.

Such **automatic** backup feature of the spanning tree algorithm

provides the transitional process "directly" as claimed.

Conclusion

17.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Anthony Sol whose telephone number is (571) 272-

5949. The examiner can normally be reached on M-F 7:30am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Wing Chan can be reached on (571) 272-7493. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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10/26/07

WING CHAN
SUPERVISORY PATENT EXAMINER

AMS

10/26/2007